Otulo P[1], Ngotiek P[2], Yiaile AL[2], Serrem CK[2], Menge D[3] and Wanzala W[3]*

[1]Narok County Teaching, Research and Referral Hospital, County Government of Narok, P.O. Box 11-20500, Narok, Kenya
[2]The University Health Unit, Maasai Mara University, P.O. Box 861-20500, Narok, Kenya
[3]Department of Biological Sciences, School of Science and Information Sciences, Maasai Mara University, P.O. Box 861-20500, Narok, Kenya

Research Article

An Assessment of the Need to Establish a Nursing Training Institution in Narok County, Kenya

Abstract

Background: Nursing profession is focused on caring individuals, families and communities with a view to helping them attain, maintain, or recover optimal health and quality of life in the society. Nurses are therefore on high demand in order to meet the deficit and adequately combat health problems in the society.

Objective: The objective of this study was therefore to evaluate the need to establish a training institution for nurses in Narok County in order to increase the nursing workforce.

Materials and Methods: A baseline study was conducted by administering a well-structured questionnaire to key respondents who comprised health workers, particularly health managers within Narok County and its environs. A comprehensive literature review was conducted and contrastingly and analytically compared. Data analysis utilized descriptive statistics using SPSS version 22.

Results: Out of 30 respondents, over 70% were married while less than 30% were single. In terms of gender, 80% of the respondents were female while the remaining 20% were male. Most respondents (85%) had only training in tertiary institutions compared with those who had attained university level qualifications (15%). 77% of the respondents were aware of the situation of nursing profession in the County while 23% were not. 76.9% of the respondents had a positive attitude towards nursing profession while 23.1% indicated that they did not have a positive attitude towards nursing profession. Those who had positive attitude indicated they can keep dignified attitude towards nursing profession. On advancement of their careers, 90% of those interviewed indicated they were ready to continue in advancing their nursing education. Many respondents (85%) indicated that the practice of nursing is admirable in Narok County. Some respondents reported staff shortage, promotion problems, less motivation, people's attitudes and lack of facilities to be among the major challenges facing the nursing profession.

Conclusion: In conclusion, as much as there is need to address major issues related to promotion, job security, health resources, establishment of appropriate nursing cadre in nursing industry and under-staffing, the establishment of a training institution to increase the nursing workforce in Narok County is exceptional.

Introduction

Optimal health is fundamental to any kinds of sustainable development in human society with three out of the eight Millennium Development Goals (MDGs) directly referring to health situations. The sub–Saharan region is in particular disadvantaged as it faces an acute shortage of health workers while on the other hand it has more than 24% of the global burden of ill–health conditions and only 3% of the world's healthcare providers [1–6]. General Assembly of the World Federation of Public Health Associations (WFPHA) noted that there were only 750,000 health workers in the entire of sub–Saharan Africa, a region that serves 682 million people [7]. Further, WFPHA estimated that Africa needed about 1 million more doctors, nurses and midwives (as well as pharmacists and other categories of health professionals) in order to achieve the Millennium Development Goals, thus underscoring the need of a high level training of all cadres of health professionals.

Nursing being the largest proportion of the health workforce, it is indeed a crucial component of health workforce and therefore deserves a special attention in all frameworks of sustainable developments as presented in the Kenyan National Vision 2030 Health Strategic Plan. To have a robust healthcare system that is effective, efficient and delivers quality patient

care services, a professionally trained, competent and motivated health workforce of nurses is a priority for this to be realized [8,9]. Additionally, research and continuous professional development are needed in order to enable nurses and midwives to work effectively, efficiently and promote patient safety and offer quality healthcare services [8]. To facilitate the realization of this success, a sufficient workforce of nurses that is licensed, strategically deployed and equitably distributed is much needed [10].

In Kenya, nurses provide the largest proportion of the health workforce at all levels of health services delivery [9]. In 2004, it was noted that in Kenya, there were only 33 nurses with Diploma qualifications for every 100, 000 population, while only one nurse with Bachelor of Science in Nursing (BScN) Degree qualifications existed for every 100, 000 population. These rates were quite very low and just below the required standards and henceforth, cannot meet the needs of health industry for the rapidly growing population in Kenya. Currently, Narok County has a work force of 365 nurses working in the 110 health facilities of the Government of Kenya (GOK), 28 private health facilities and among these nurses, only 20 are with BScN Degree qualifications.

The survey study was therefore conducted to provide a systematic inquiry of training needs within the nursing profession in Narok County, Kenya for the purposes of identifying training priorities and making decisions and allocating finite resources in a manner consistent with identified goals and objectives of the Bachelor of Science in Nursing Degree programme at Maasai Mara University, Narok County [11].

Materials and methods

The study area: Narok County

Narok County is one of the 47 Counties in Kenya with an area of 17, 944 sq km, a population of 850, 920 and is the second most rural County, after Tharaka Nithi County. The percentage of those residents living in the urban area is 6.9% while the remaining percentage of residents resides in the rural areas (93.1%), hence the rurality of the County. According to the 2009 Kenya Population and Housing Census (KPHC), out of a population of 850, 920 people, 429, 026 were males while 421, 894 were females. This population increased to 979, 770 in 2012 with 493, 991 males and 485, 779 females. The population is projected to increase further to 1, 239, 320 by 2017. Although about 6.9% of the population lives in urban centres, urban population is projected to increase due to rural-urban migration as a result of fairly developed infrastructure, economic opportunities and security. Settlement pattern in the rural areas is influenced by availability of pasture, water for livestock and domestic use, land viability and security.

The County is located west of Nairobi and supports Kenya's economy in south-west of the country along the Great Rift Valley and north of Tanzania (Figure 1). Traditionally, Narok County got its name from the Maasai name, *Enkare Narok* (meaning black water or dark water) named after, *Enkare*
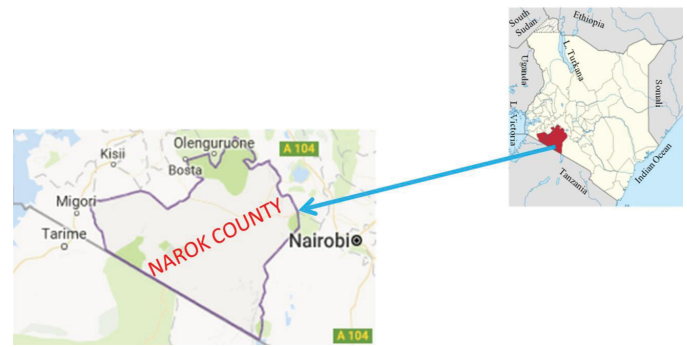

Figure 1: The geographical location of the Narok County in Kenya.

Narok River flowing through Narok town, across the County. The County lies between latitudes: -1° 04' 59.99" South and longitude: 35° 52' 0.12" East. Narok County has an elevation of 1827 meters (5, 997 feet) altitude above the sea level. It has a minimum of 8 and a maximum of 28 degrees Celsius in temperature. Due to these high temperatures, most of the plant species are acacia and others are mere shrubs that have developed certain physiological features that prevent excessive loss of water from them. The county receives two rainy seasons with an average of rainfall ranging from 500 to 1800 mm per year.

Economy of Narok County

Both arable and livestock farming activities are practiced in equal measures as the main socio-economic activities alongside tourism industry and fish farming. However, many indigenous residents practice livestock farming more than arable farming as a traditionally inherent and main socio-economic activity. Those residents with enough monetary resources and have large parcels of land, mainly immigrants, do practice mechanized commercial farming in addition to the commonly practiced subsistence farming. All types of livestock ranging from birds, goats, rabbits, bees, sheep, pigs, cattle, donkeys to camels are kept while the crops grown include: wheat, tea, carrots, potatoes, maize and barley, which are used to process food products such as flour and beer as well as many other market gardening crops such as Irish potatoes, horticultural crops and French beans.

The source of information

The information was surveyed from different sources in the study area, Narok County. The survey involved a sample of 30 key respondents of mixed sex and ages and drawn from health workforce of Narok County. These sources included all cadres of health professionals while others provided leads to the key respondents. We also attended public meetings organized by local administrators to identify more possible respondents. Local health professionals, as well as individual companies in the private sector equally contributed their knowledge on the state of nursing workforce in Narok County and subsequent need to develop a nurse training institution in the County. Other sources of data came from health-based NGOs and CBOs working within Narok County.

Key steps to accessing relevant information for the study

Constitution of sampling group: The first step was the generation of a purposive sample of 30 key respondents from the sources mentioned above. Key respondents are local experts or people in the study area of Narok County with a profound knowledge of a particular issue or technology of interest (in this case, the state of nursing workforce and the need for a nurse training institution in Narok County) [12-14]. They have a more extensive understanding of local social and health-cultural systems than others in the community. A purposive sample referred to a particular subset of knowledgeable people in the nursing workforce. Intensive and extensive collaboration and interaction with these key respondents was considered to be an effective and efficient research strategy of accessing relevant research information [15,16]. A random sample would not have been appropriate for this sort of socio-cultural set-up, in which we depend on certain specialized specific knowledge [12], as not everyone sampled randomly may have the required knowledge and/or information.

The questionnaire method: This was the main method used to identify key respondents and obtain local and remote information on the state of nursing workforce and the need for a nurse training institution in Narok County. The questionnaire was developed and administered and interviewees were asked to fill in a well-structured open-ended questionnaire. The questionnaire consisted of 15 questions based on the following broad categories, commonly known as **PAKAP**: (1) **characteristics of respondents**: knowledge about the nature of the study population through a biodata composition, (2), **perception (P)**: the way one thinks about or understands the state of nursing workforce and the need for a nurse training institution in Narok County, (3), **awareness (A)**: knowledge, understanding, appreciation, recognition and attention to the state of nursing workforce and the need for a nurse training institution in Narok County, (4), **knowledge base (K)**: facts, information and skills acquired by a person through experience or education; the theoretical or practical understanding of the state of nursing workforce and the need for a nurse training institution in Narok County, (5), **attitude (A)**: an expression of favour or disfavour toward the state of nursing workforce and the need for a nurse training institution in Narok County, and (6), **practices (P)**: performance/exercise of nursing repeatedly or regularly in order to improve or maintain one's proficiency. From the questionnaires, key respondents were identified basing on whether the statement and/or the questionnaire indicated that a respondent had potentially useful information on the subject of interest and could therefore be engaged in further interviews/discussions.

Personal interviews with key respondents: The third step was conducting the interviews/discussions with key respondents. The interviews were guided discussions, semi-structured by a mental checklist of relevant points to confirm the validity of the questionnaire information.

Focus-group discussions: The fourth step involved holding joint focus-group discussions with all stakeholders, mainly the Narok County Health Management Team. A focus-group discussion is an exploratory discussion designed to obtain perceptions on a specific theme from a target group in a non-threatening environment [17,12]. This kind of group interaction produced data and insights that would have otherwise been less accessible [18]. The interaction between all stakeholders formed the collaborative and participatory appraisal (AP) approaches utilized to build a consensus and verify that the information from other interviewees was accurately recorded [19]. The group interaction also minimized the objectification of the respondents as the only source of data [15]. One purpose of this form of collaborative research was to return decision making, based on theoretical knowledge, to the community, rather than conceding this role to the conventionally western-trained expert [16]. Empowerment of research subjects can take place when theory is allowed to inform practical action and by returning knowledge for use to its point of origin [16], through consultative community-based training workshops and manual booklets translated into local/native languages.

Collection of secondary data: The fifth step involved the collection of secondary data on the state of nursing workforce and the need for a nurse training institution in Narok County from the County offices, NGOs, CBOs, FBOs etc. This was followed by an extensive literature search on the subject of interest from the internet, research institutions, NGOs, CBOs, FBOs Nursing Council of Kenya (NCK) etc.

Statistical management and analysis of data

Data collected were coded and entered in a Statistical Products and Service Solutions (SPSS version 22 for windows) spread sheet for management, cleaning and subsequent analysis. Descriptive statistics was utilized to present the results and inferential statistics (Students-Newman-Keuls H test and one-way analysis of variance (ANOVA)) applied where necessary at $\alpha = 0.05$ [20] using the general linear model (GLM) procedure for SPSS.

Results

The questionnaire method

The questionnaire method was instrumental in allowing the participation of a cross-section of local residents in the research survey. This helped us to obtain more useful information than we thought before and this method ensured that ideas expressed in more than one way were correctly identified and accurately recorded throughout the study. In addition, it allowed a considerable number of knowledgeable key respondents living in remote areas to be reached and to meet the targets of the survey [21]. Many of these people reached gave useful leading viewpoints as shown in Figures 2-7.

### Interviews with key respondents and focus-group discussions

Focus-group discussions were instrumental in enabling us to transcribe the information generated accurately. This method of group discussions furthermore yielded more information

that was not known by the questionnaire, thus providing opportunities for further investigation. The discussion sessions helped to resolve the controversies among interviewees of multiple ideas referring to one issue and *vice versa.* Following numerous meetings and interactions, a consensus was built amongst the discussion groups on the correct idea.

It also became self-evident during the focus-group discussions that there was need for the investigators to: (1), take time and establish a strong, trusting relationship based

Figure 5: The liking (YES) and disliking (NO) the practice of nurse profession in Narok County.
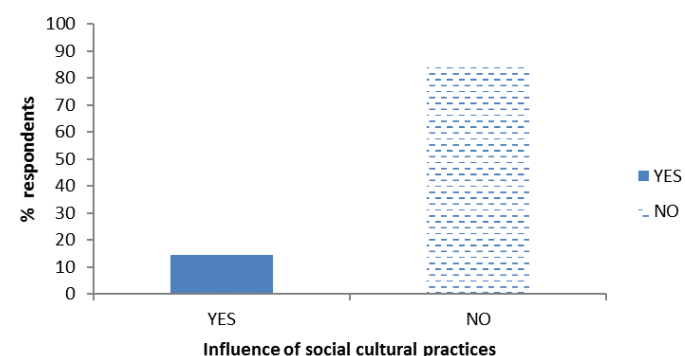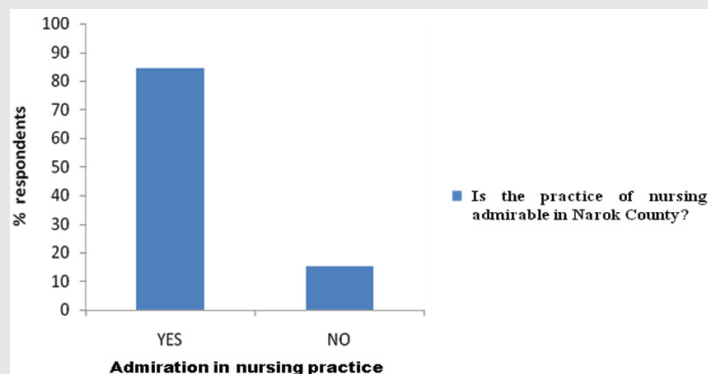

Figure 2: The proportion of respondents who refuse (NO) and accept (YES) the socio-cultural practices of the Maasai community to have influence on the choice of nursing as a professional career in life.

Figure 6: The levels of liking the practice of nurse profession in Narok County.
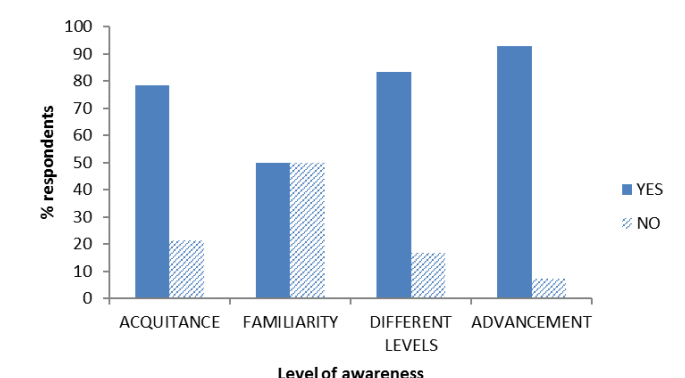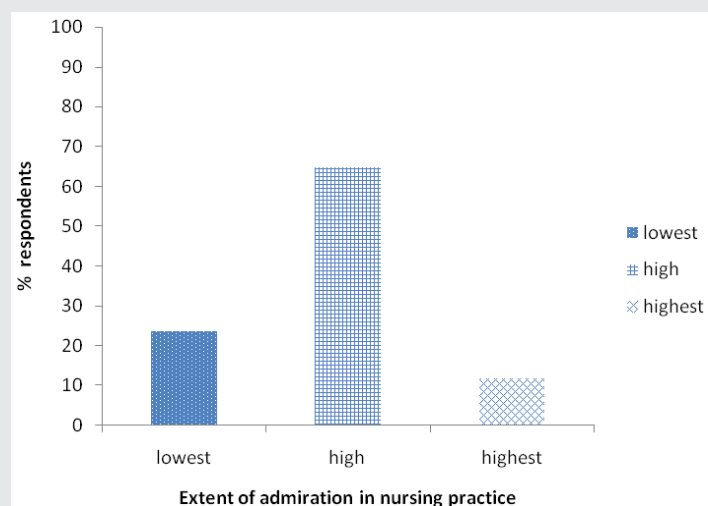

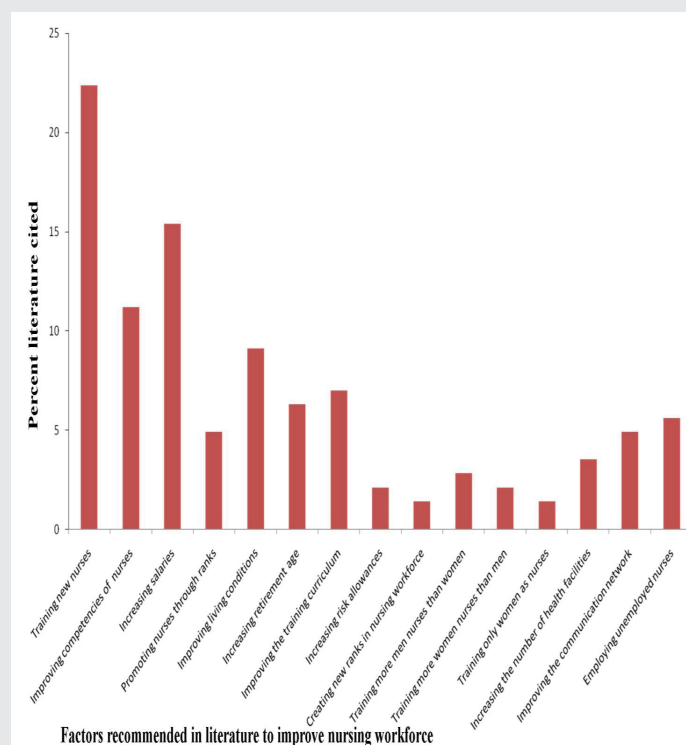**Figure 3:** The level of awareness of the nurse training profession amongst the respondents in Narok County.
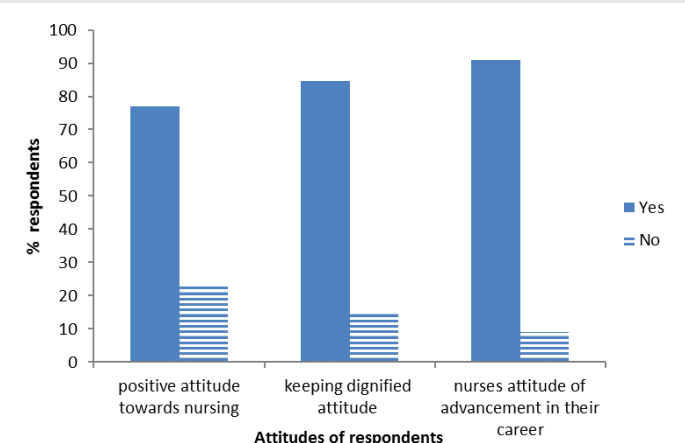
Figure 4: Attitude of the respondents towards nurse training profession as a career in Narok County.

Figure 7: The rating of factors considered in literature review following evaluation and analysis as the most important in improving the nursing workforce in Kenya (n = 143).

on honesty, openness and cooperation with the interviewee, (2), work on projects of common interest and benefit with the interviewee, (3), continuously foster communication between partners, and (4), provide value-added knowledge back to the community in the form of useful products (such as reports in local/native languages towards the end of the project) and services, and share equitably with the interviewees any benefits arising from the survey study.

Some general characteristics of respondents in Narok County

Out of 30 respondents, over 70% were married while less than 30% were single. Majority of those interviewed indicated that they reside in Narok, Kajiado and Transmara areas, an implication that the interviewees were residents familiar with study area and by virtue of their health profession; they understood very well the workforce situation of nursing in the study area, Narok County. This was confirmed by the fact that most respondents (79%) provided nursing care services to the public within Narok County.

In terms of gender, 80% of the respondents were female while the remaining 20% were male as nursing profession is still dominated by females here in Kenya. From the existing information in literature, both male and female are preferred in the nursing workforce in Kenya but the public sector has employed significantly more female nurses at 77%, compared to 83% in Faith-based Organizations and 82% in parastatal health facilities (**Wakaba et al., 2014**).

Most respondents (85%) had reached the level of middle level college such as Kenya Medical Training College (KMTC) followed by university level qualification (15%). Management duties revealed by those interviewed included: nursing care (45%), maternity (20%), public health (15%), nutrition (10), community work (3%) and casualty (2%). A bout 80% of the respondents were ready for more training to acquire more knowledge and necessary skills and competencies for efficient and effective delivery of nursing care services in health industry.

Perception of nurse training in Narok County

Most respondents (85%) indicated that nursing profession is not influenced by any community-based socio-cultural practices in Narok County while 14% of the respondents agreed that socio-cultural practices influence the nursing profession in Maasai community, which is a male-dominated community in decision-making processes at all levels in the entire society (Figure 2). From the community's culture, females are hardly accepted and appreciated as nurses in the health facilities as according to the community, this is indeed the role of males who are supposed to occupy all cadres of health professionals. While on the other hand, nursing services are still dominated by females throughout the country, so it becomes perplexing for females to train and serve Narok County as nurses and/ or as doctors. However, efforts of women empowerment in Narok County have yielded some fruits as about 81% parents/ guardians indicated willingness to advice their children/

dependants, regardless of their sex, to pursue nursing profession as a career at Maasai Mara University. This implies that many respondents have shown that there is need to have nursing training programmes especially at Maasai Mara University that is close to them.

Awareness of nurse training profession in Narok County

Many of the respondents were interviewed on whether they were aware of nursing profession. About 77% of the respondents indicated that they were aware of the nurse training profession while 23% were not aware of it in the Narok County (Figure 3). Half of the respondents (50%) claimed they were familiar of the nurse training profession in Narok County while the other half (50%) indicated that they did not have any idea of the said nurse training profession. The respondents were also asked to reveal the different levels of nursing profession they are aware of. Most respondents (83%) reported a Bachelor's Degree while the remaining indicated a Certificate and/or Diploma level. Out of the 30 respondents, 90% were willing to advance from their current levels of Certificate and/or Diploma to higher levels they were familiar with.

Knowledge base on nurse training profession and workforce in Narok County

There are 17 Counties mainly in the North East and South West Kenya with no nurse training institution in the country, Narok County inclusive. The Narok County has 350 trained nurses of all categories working in 110 health facilities of the Government of Kenya (GOK), 28 private health facilities in the whole County with a population of 979, 770 (493, 991 males and 485, 779 females). The current situation in Narok County is therefore: 1 nurse: 2431 people against WHO recommendation of 1 nurse: 400 people. Of these 350 nurses, only 20 are with BScN qualification in the entire County, otherwise the rest (330 nurses) are with a Certificate and/or Diploma qualification. The BScN qualification has been noted to be the most relevant in top management and capacity building in nursing industry. From this survey study, the results showed that the entire County is understaffed with the nurse workforce at all levels, hence the need to train and strategically deploy more nurses in existing health facilities.

Attitude towards nurse training profession in Narok County

About 76.9% of the respondents had a positive attitude towards nursing profession in Narok County while 23.1% indicated that they did not have a positive attitude towards nursing profession (Figure 4). Those who had positive attitude indicated they can maintain a dignified attitude towards nursing profession as a career in life. On advancement of their careers, 90% of those interviewed indicated they were ready to continue in advancing their nurse training profession to higher levels when opportunity a rises.

Practice of nursing in Narok County

Many respondents indicated that the practice of nursing is admirable in Narok County (Figure 5). Those who said the

012

practice was admirable were 85% while the remaining 15% reported the profession was not admirable.

The extent of admiration in nursing practice was noted during the survey study. Amongst the respondents who liked the practice of nurse profession in Narok County (85%), it was noted that the level of liking the practice of nurse profession was not the same throughout the County. Most respondents indicated it was high followed by those who thought that the level of admiration was at its lowest (Figure 6). A few indicated the extent of admiration in nursing practice was highest.

Challenges in nursing industry in Narok County

During the study survey, it was noted that there were many challenges facing health industry in Narok County [22-24]. These challenges vary in terms of how they impact on health delivery services throughout the entire County. Respondents reported a number of challenges that need to be addressed in Narok County and include the following:-

a), Staff shortage due to lack of local training facilities/ resources,

b), Poor earnings amongst the nursing staff,

c), Failure to promote nursing staff when they are due,

d), Less motivation and poor definition of nursing cadres,

e), People's negative attitude towards nursing profession,

f), Lack of essential health facilities and poor working environments with limited resources,

g), Rurality of health facilities and poor networking and/or ICT infrastructure to help computerize some services,

h), Practice of corruption, nepotism and tribalism in the health industry,

i), Political interference with the professional operationalization of health industry,

j), Lack of gender mainstreaming policy in health industry and sexual harassment,

k), Heavy workload and poor performance at the health facilities,

l), Death of nurse staff members without replacement,

m), An aging nurse workforce and retirement of nurse staff without replacement,

n), Lack of monetary resources to employ new nurses, build health facilities and buy necessary equipment,

o), Fast-expanding health facilities to meet the health needs of fast-growing population,

p), Poor statistics and records of nursing workforce,

q), Poor infrastructure and social amenities make people be with limited access to healthcare,

r), Sexual harassment amongst health workers,

s), Poverty amongst people make them unable to afford essential health care services,

t), Lack of political will to improve the working conditions and environment of nurses, and

u), Frequent strikes without eminent solution(s).

Addressing these 21 challenges is not an easy task in any ways as outlined by [25,22-24]. This is an indicator of how the nursing workforce is complex, in a state of confusion and compounded with a series of problems, which require a well thought out comprehensive system of analysis in order to help approximate to sustainable solutions. Approaches to any one of the above challenges should be holistic in nature and therefore may require concerted efforts from all types of human resources in the society in order to rise to the challenges [26].

Factors considered for improving nursing workforce

About 143 different types of literature sources of all kinds were conducted and 15 factors recommended in literature to improve nursing workforce considered and analyzed (Figure 7). From this analysis, training new nurses followed by increasing the nurses' salaries, improving their competencies and living conditions, in that order, were prioritized. Some of the least factors considered included: training women alone and/or in greater number than that of men, creating new ranks in nursing workforce and increasing their risk allowance. These results (Figure 7) show unique preferences by researchers, scientists, educationists, nutritionists, practicing nurses/midwives and managers of nursing workforce whose documented views on how they considered nursing workforce to be improved in Kenya and even elsewhere was evaluated and analyzed. Although socially fitting and very important, views such as instilling the spirit of patriotism, integrity, love and self-scarifying for Kenya as a country amongst health professionals to help address the issue of "brain drain" and any other related global-based migrations out of the country were not considered in the analysis due to the fact that they featured only once or twice in literature [22-24].

Discussion and conclusion

Discussion: Nurse training areas and needs

Between a period of 2013 – 2018, nurses in health industry are expected to increase at the rate of 13% annually with a gap of 40, 468 nurses in 2015, 35, 685 nurses in 2020, 28, 941 nurses in 2025 and 19, 501 nurses in 2030 as per 2013 projections [27]. This therefore indicated a significant shortage of nurses in Kenya and will require that the number of nurses in Kenya should increase by more than 50% annually in order

to meet the standards required by WHO. Based on the active nursing workforce, Kenya has a nurse to population ratio of 103.4 nurses per 100, 000 population compared to the WHO recommendation of 250 health workers per 100, 000. However, the national average number of nurses working in Kenya's public, parastatal and Faith-based Organizations (data on nurses working in private health facilities was not available) was 51.5 deployed nurses per 100, 000 population [28]. Indeed there is need to train more nurses and fill this gap [22,23].

Healthcare learning institutions continue to recognise the need to build capacity in nursing industry in order to facilitate optimum healthcare management and practice at all levels. In a bid to package a result oriented and self-actualization driven BScN programme, over 143 sources of secondary information and data on nursing workforce was accessed and analyzed (Figure 7). Over 22.4% of these sources of secondary information and data indicated that there is greater need to train new nurses, increase their competencies and give them good salaries in that order (Figure 7) so as to realize success of quality healthcare service delivery while addressing health challenges that face the people of Kenya. Courses on integrity, patriotism and ethics in professionalism are recommended to address challenges of corruption, nepotism and tribalism and further help to retain nurses in Kenya, in their respective geographical locations. Locating training institutions such as Maasai Mara University in rural and remote areas will help address the problem of imbalances in geographic distribution, staffing ratios or skill mix and the supply and demand of health workers in Kenya as the training will focus on the locals who have no intention to move to another place after attaining the required health qualifications. Majority of nurses in the country have Diploma qualifications and through Continuing Professional Development as recommended by the Nursing Council of Kenya, will advance to higher qualifications of degrees of training to increase their competencies and henceforth, service delivery to clients [28]. The training of nurses in BScN programme has been steadily increasing in the country over the years and this indicates the need of this programme amongst the stakeholders (Figure 4). Parastatal facilities have employed the highest percentage of nurses with BScN qualifications at 5%, compared to 2% in Faith-based Organizations and 1% in public health facilities.

The Private-Public partnership is addressing the problems of nurse deficit in Kenya through Emergency Hiring Plan (EHP), which focuses on speeding up hiring and deployment and upgrading training [29]. However, this strategy has not been sustainable in the country other than the one of training more new nurses based on Counties as their geographical place of origin. By this strategy, it will be easier to retain the trained nurses in some very remote and rural areas such as the target area of Narok County. This will go along way engaging the nurses with the entire local community and focus on an individual problem for which there are individual solutions

and healthcare systems that treat the symptoms and not the root causes of ill-health. Instead, such approaches emphasize the knowledge and expertise of individuals and communities living through an experience and the centrality of drawing on this source of expertise to define problems and solutions and ultimately to design more effective services. The main benefits of such community development approaches have been summarized as: -

a) Improving networks in a community, this has been shown to have a protective effect on health.

b) Identifying health needs from users' point of view in particular disadvantaged and socially excluded groups.

c) Change and influence, as it enhances local planning and delivery of services.

d) Developing local services and structures that act as a resource.

e) Improving self-esteem and learning new skills that can aid employment.

f) Widening the boundaries of the health care debate by involving people in defining their views on health and local services.

g) Tackling underlying causes of ill health and disadvantage.

All these can only happen if the nurse professionals involved are aware and have the skills in undertaking effective and efficient steps in an active manner one is being engaged in the community context as they provide the services in the professional capacities.

Addressing the health worker shortages in Kenya is one of the most pressing problems of the government. Short-term interventions rather than long-term ones are required in order to respond to the significant gaps between recommended WHO health worker to population ratios and the employed workforce. Such interventions may include:-

a), a long-term heavy investment plan in the training infrastructure,

b), train more nurses who takes a short period of time and offer effective health services than doctors, and

c), sound, competitive and attractive recruitment and employment policies that are able to retain health workers.

It is indeed projected that if the above interventions are met, then WHO health recommendations will also be met by 2030 where 500 nurses will be attracted annually into the active workforce of nurses in addition to the new graduates (between 2014 to 2024) [27,22,30].

Conclusion

Starting new health institutions and subsequent academic programmes is currently part of the Kenya government's efforts to train and strategically deploy more healthcare workers with an overall goal of strengthening the health sector in the country. This is one of the strategies being undertaken to address some of the above 21 challenges [31]. From the foregoing analysis of results obtained from the baseline survey study in Narok County, There is need to train more nurses and fill the existing gap: 1 nurse: 2431 people against 1 nurse: 400 people, recommended by WHO [23].

With the rurality and remoteness of Narok County, the University as a training institution for nurses is well positioned to balance geographic distribution, staffing ratios or skill mix, supply and demand of nurses. There are indications from the baseline survey study that, about 330 nurses with Certificate and Diploma qualifications are ready to join its advanced Nursing programmes for BScN qualification. Training locals like the Maasai people in Narok County, is key in capacity building in remote and rural areas such as these of Narok County as the training will focus on the locals who have no intention to move out of the County to another place after attaining the required health qualifications. The Continuing Professional Development (upgrading) is recommended by the Nursing Council of Kenya as one way to increase nurses' competencies, skills and henceforth, service delivery to clients [5,28].

By starting the nurse training programmes, Maasai Mara University will comprehensively complement the Ministry of Health in realizing the much needed numbers of health professionals required to achieve Kenya's Vision 2030.

References

1. Buchan J, Calman L (2004) The global shortage of registered nurses: an overview of issues and actions. Geneva: International Council of Nurses **Link:** https://goo.gl/dlGjAT

2. Africa's health workforce crisis (2004) Addressing Africa's health workforce crisis: an avenue for action. Washington DC, New York, USA: High-Level Forum on the Health MDGs **Link:** https://goo.gl/UiUszg

3. World Health Organization Report (2006) The world health report 2006: working together for health. Geneva: World Health Organization **Link:** https://goo.gl/qDfc3m

4. Anyangwe SC, Mtonga C (2007) Inequities in the global health workforce: the greatest impediment to health in sub-Saharan Africa. Int J Environ Res Public Health 4: 93-100. **Link:** https://goo.gl/hc5m4N

5. Lehmann U, Dieleman M, Martineau T (2008) Staffing remote rural areas in middle- and low-income countries: a literature review of attraction and retention. BMC Health Serv Res 8: 19. **Link:** https://goo.gl/GIeF6k

6. Rakuom C (2010) Nursing Human Resources in Kenya: Case study. International Centre for Human Resources in Nursing. **Link:** https://goo.gl/ZB3Zam

7. World Health Organization (2004) High level forum on the health MDGs. Addressing Africa's health workforce crisis: an avenue for action. Abuja. **Link:** https://goo.gl/qaF3MK

8. World Health Organization Report (2010) Achieving health-related Millennium Development Goals: Strengthening nursing and midwifery workforce in the WHO European Region **Link:** https://goo.gl/RDEHik

9. Kenya Nursing Workforce Report (2012) Kenya Nursing Workforce Report: The Status of Nursing in Kenya **Link:** https://goo.gl/mq6JPk

10. Ministry of Medical Services and Ministry of Public Health & Sanitation (2012) Accelerating attainment of Health Goals: The Kenya Health Sector Strategic and Investment Plan - KHSSP, July 2012 - June 2017. Ministry of Medical Services and Ministry of Public Health & Sanitation. The second medium term plan for health. Ministry of Medical Services and Ministry of Public Health & Sanitation, Afya House, PO Box 3469 - City Square, Nairobi 00200, Kenya.

11. Fernando S (2012) Conducting Needs Assessments: A Multidisciplinary Approach. Thousand Oaks, California **Link:** https://goo.gl/djNgys

12. Etkin NL (1993) Anthropological methods in ethnopharmacology. Journal of Ethnopharmacology 38: 93-104. **Link:** https://goo.gl/9XskQO

13. Waters-Bayer A, Bayer W (1994) Planning with pastoralists: PRA and more. A review of methods focused on Africa. Germany Agency for Technical Cooperation 1-106. **Link:** https://goo.gl/Ja29M4

14. McCorkle MC, Rangnekar VD, Mathias-Mundy E (1997) Introduction: Whence and Whither ER&D? In: Mathias E, Rangnekar VD, McCorkle MC, Martin M (Eds.) Ethnoveterinary Medicine: Alternatives for Livestock Development. Proceedings of an International Conference held in Pune, India, November 4-6, 1997. Volume 1: Selected Papers. File 2 of 9: Part 4: Introduction and Part 1: Applied Studies of Ethnoveterinary Systems. BAIF Development Research Foundation, Pune, India.

15. Oakley A (1981) Interviewing women: A contradiction in terms. Participatory Research and the Race to Save the Planet: Questions, Critique and Lessons from the Field. Agriculture and Human 4-25. **Link:** https://goo.gl/3dQXNa

16. Warry W (1992) The eleventh thesis: Applied anthropology as praxis. Human Organization 51: 155-163. **Link:** https://goo.gl/G7SKA1

17. Krueger RA (1988) Focus groups: a practical guide for applied research. In: Agar, M., MacDonald, J., (Eds.), Focus groups and ethnography. Human Organization 54: 78-86.

18. Morgan DL (1996) Focus groups as qualitative research. Focus groups and ethnography. Human Organization 54: 78-86. **Link:** https://goo.gl/XBJDxk

19. IIRR (1994) Ethnoveterinary medicine in Asia: An Information kit on traditional animal health care practices. International Institute of Rural Reconstruction **Link:** https://goo.gl/YS734R

20. Sokal RR, Rohlf FJ, (1995) Biometry. The Principles and Practices of Statistics in Biological Research p. 887.

21. Sutton JA, Orr BD (1991) The use of the school essay as an RRA technique: A case study from Bong County, Liberia. RRA Notes. Participatory Methods for Learning and Analysis **Link:** https://goo.gl/UufqT4

22. Lutwama GW, Roos JH, Dolamo BL (2013) Assessing the implementation of performance management of health care workers in Uganda. BMC Health Services Research 13: 355. **Link:** https://goo.gl/lhMUCv

23. Momanyi GO, Adoyo MA, Mwangi EM, Mokua DO (2016) Value of training on motivation among health workers in Narok County, Kenya. The Pan African Medical Journal 23: 261. **Link:** https://goo.gl/0Z2AvU

24. Momanyi GO, Adoyo MA, Mwangi EM, Mokua DO (2017) Strengthening Strategic Reward Framework in Health Systems: A Survey of Narok County, Kenya. Global Journal of Health Science 9: 181-190. **Link:** https://goo.gl/kk88wo

25. Chankova S, Muchiri S, Kombe G, (2009) Health workforce attrition in the public sector in Kenya: a look at the reasons. Hum Resour Health 7: 58. **Link:** https://goo.gl/0Uv1Jn

26. Chankova S, Kombe G, Muchiri S, Decker C, Kimani G, et al., (2006) Rising to the challenges of human resources for health in Kenya: developing empirical evidence for policy making.: USAID, Partners for Health Reformplus **Link:** https://goo.gl/vINBUC

27. Kenya Ministry of Health (MOH) and IntraHealth International (2013) Health Workforce Forecast Kenya: A Reference Report. Nairobi, Kenya.

28. Wakaba M, Mbindyo P, Ochieng J, Kiriinya R, Todd J, et al. (2014) The public sector nursing workforce in Kenya: a county-level analysis. Hum Resour Health 12: 6. **Link:** https://goo.gl/ovxrdm

29. Anonymous Health Report (2008) Scaling up, saving lives: task force for scaling up education and training for health workers. Geneva: Global Health Workforce Alliance **Link:** https://goo.gl/NPFkvs

30. Ojakaa D, Olango S, Jarvis J (2014) Factors affecting motivation and retention of primary health care workers in three disparate regions in Kenya. Human Resources for Health 12: 33. **Link:** https://goo.gl/5RhTOr

31. Wamai R (2009) The Kenya health system-analysis of the situation and enduring challenges. Japan Medical Association Journal 52: 134-140. **Link:** https://goo.gl/pKwWpV